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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,094	10/31/2003	Hideki Saga	NIT-400	1456

7590 08/23/2005  
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EXAMINER

FIGUEROA, NATALIA

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/697,094

Applicant(s)

SAGA ET AL

Examiner

Natalia Figueroa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 3-5,7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/31/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement (IDS) submitted on 31 October 2003 (10/31/2003) is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Naya (USPN 6,584,062).

RE claim 1, Naya discloses a recording head for generating an optical near field (abstract, fig1, and col. 3, lines 29-30) and thermo-magnetically recording information on a recording medium (col. 4, lines 6-15), comprising a light source (or laser, fig. 1, and col. 3, line 34); a first magnetic pole for applying a magnetic field to the recording medium (or probe, fig. 1, and co. 3, lines 43-44); and a diffuser that generates an optical near field in the vicinity of the recording medium when light is radiated from the light source (or lenses, fig. 1, and col. 3, lines 33-34), wherein the diffuser is formed with it in contact with the first magnetic pole so that the face which light from the light source

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irradiates is substantially perpendicular to the recording medium (or in fig. 1 trajectory of the light emitted by the laser, fig. 1, and disclosure thereof).

RE claim 2, Naya further discloses that the diffuser is arranged between a direction in which light from the light source is outgoing and the first magnetic pole with the back of the face which the light irradiates in contact with the first magnetic pole (or in fig. 1 trajectory of the light emitted by the laser, fig. 1, and disclosure thereof).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naya in view of Takuya et al (JP2001-255254), hereinafter Takuya.

RE claim 6, Naya is relied upon for the same reasons of rejection as stated above. Naya fails to explicitly teach that the diffuser is substantially an isosceles triangle

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(abstract); and the diffuser is installed with its vertex between two sides equal in the length opposite to the recording medium (abstract and fig. 1).

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naya in view of Sukeda et al ("Thermally Assisted Magnetic Recording..."), hereinafter Sukeda.

RE claim 9, Naya discloses an information recording/reading apparatus for generating an optical near field (abstract, fig1, and col. 3, lines 29-30) and thermomagnetically recording/reading information on a recording medium (col. 4, lines 6-15), comprising a light source (or laser, fig. 1, and col. 3, line 34); a magnetic pole for applying a magnetic field to the recording medium (or probe, fig. 1, and co. 3, lines 43-44); and a diffuser that generates an optical near field when the diffuser receives light from the light source (or lenses, fig. 1, and col. 3, lines 33-34), wherein the diffuser is formed with it in contact with the magnetic pole so that the face which light from the light source irradiates is substantially perpendicular to the recording medium (or in fig. 1 trajectory of the light emitted by the laser, fig. 1, and disclosure thereof). Naya fails to explicitly teach magnetic flux detection means that detects a magnetic flux of the recording medium is provided.

However, Sukeda discloses such on (page 1243, ¶I, Introduction and fig. 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the apparatus as disclosed by Naya with the above teachings from Sukeda to provide flux detector, hence detecting the flux in the medium, therefore satisfactorily recording reliable data in the medium.

RE claim 10, the combination of Naya and Sukeda is relied upon for the same reasons of rejection as stated above. Sukeda further discloses scanning means so that the diffuser and the magnetic flux detection means scan a desired position of the recording medium (page 1243, ¶I and II, and fig. 2).

*Allowable Subject Matter*

8. Claims 3-5 are 7-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

RE claims 3-5, the prior art of record, and in particular Naya (USPN 6,584,062), fails to teach or suggest a head comprising a second magnetic pole different from the first magnetic pole, wherein the diffuser is arranged between the first magnetic pole and the second magnetic pole with the face which light irradiates of the diffuser in contact with the first magnetic pole and wherein the second magnetic pole is formed so that it is substantially perpendicular to the recording medium and is substantially orthogonal to a scanning direction.

RE claims 7-8, the prior art of record, and in particular Naya (USPN 6,584,062), fails to teach or suggest a head that the diffuser is made of any of Au, Pd, Pt, Rh and Ir or an alloy of these and that one end of the first magnetic pole is connected to the second magnetic pole; the other end reaches the bottom of the recording head; and the first magnetic pole is opposite to the information recording medium.

*Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with respect to thermally assisted recording.

a) Ichihara et al (USPN 6,741,524): Discloses a thermally assisted recording device.

b) Akiyama et al (USPN 6,795,380): Discloses an optically assisted recording head.

c) Akiyama et al (USPN 6,636,460): Discloses a thermally assisted recording method.

d) Nishida et al ("XY-stage Driving Electron-Beam..."): Discloses a high-density optical recording apparatus.

e) Ito et al ("Advanced Recording Method..."): Discloses a GMR sensor and near-field optics.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Figueroa whose telephone number is (571) 272-7554. The examiner can normally be reached on Monday - Thursday 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
NFM

  
**DAVID HUDSPETH**  
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